Contents

Foreword: Towards a better management of the margins of lakes and river
by H. Decamps (UNESCO/MAB) ix

Preface :
by Anna Hillbricht-Ilkowska & Ewa Pieczyńska xi

Wetlands, lake littoral zones
Seasonal nitrogen dynamics in reed beds (*Phragmites australis.* (Cav.)Trin. ex. Steudel) in relation to productivity
by H. Kühl & J. G. Kohl 1
Growth and nutrient uptake by two species of *Elodea* in experimental conditions and their role in nutrient accumulation in a macrophyte-dominated lake
by T. Ozimek, E. van Donk & R. D. Gulati 13
Macrophyte-related shifts in the nitrogen and phosphorus contents of the different trophic levels in a biomanipulated shallow lake
by E. van Donk, R. D. Gulati, A. Iedema & J. Meulemans 19
Functioning of land–water ecotones in relation to nutrient cycling
by H. de Haan, H. T. S. Boschker, K. Buis & T. E. Cappenberg 27
Some considerations on the functioning of tropical riparian ecotones
by F. W. B. Bugenyi 33
Nitrogen and phosphorus dynamics and retention in ecotones of Lake Titicaca, Bolivia/Peru
by H. J. Carney, M. W. Binford, R. R. Marin & C. R. Goldman 39
Detritus and nutrient dynamics in the shore zone of lakes: a review
by E. Pieczyńska 49
Microbial decomposition of freshwater macrophytes in the littoral zones of lakes
by M. Belova 59
Frost formation in the ecotonal zone and its role for release of nutrients
by G. Renman 65
Effect of filtering activity of *Dreissena polymorpha* (Pall.) on the nutrient budget of the littoral of Lake Mikołajskie
by A. Stańczykowska & K. Lewandowski 73
The role of small mammals and birds in transport of matter through the shore zone of lakes
by K. A. Dobrowolski, A. Kozakiewicz & B. Leźnicka 81

Streams, rivers, riparian vegetation
Transport and retention of matter in riparian ecotones
by G. Bretschko & H. Moser 95

Nitrate transformation and water movement in a wetland area
by W. Brüsch & B. Nilsson 103
Retention of nitrogen in small streams artificially polluted with nitrate
by B. A. Faafeng & R. Roseth 113
Retention of nitrogen and phosphorus in a Danish lowland river system: implications for the export from the watershed
by L. M. Svendsen & B. Kronvang 123
Flow and retention of particulate organic matter in riparian fluvial habitats under different climates
by H. Chergui & E. Pattee 137
Importance of flood zones for nitrogen and phosphorus dynamics in the Danube Delta
by S. Cristofor, A. Vadineanu & G. Ignat 143
The Vistula river and its riparian zones
by Z. Kajak 149
Hydrological problems of the Vistula river valley near Płock
by E. Bajkiewicz-Grabowska 159

Groundwater–surface water ecotones, air–water interface
The role of water exchange between a stream channel and its hyporheic zone in nitrogen cycling at the terrestrial–aquatic interface
by F. J. Triska, J. H. Duff & R. J. Avanzino 167
Nutrient and flow vector dynamics and the hyporheic/groundwater interface and their effects on the interstitial fauna
by D. D. Williams 185
Storage and dynamics of organic matter in different springs of small floodplain streams
by M. Chafiq & J. Gibert 199
Transport of groundwater-borne phosphorus to Lake Bysjön, South Sweden
by V. Vanek 211
Role of aquatic surface microlayer in the dynamics of nutrients and organic compounds in lakes, with implications for their ecotones
by A. Södergren 217

Patch/ecotone pattern in watershed, lake–river systems
The shore vegetation in selected lakeland areas in northeastern Poland
by S. Kłosowski 227
Energy control of matter fluxes through land–water ecotones in an agricultural landscape
by L. Ryszkowski & A. Kędziora 239
Role of meadow strips for migration of dissolved organic compounds and heavy metals with groundwater
by I. Życzyńska-Bałoniak, B. Szpakowska, L. Ryszkowski & J. Pempkowiak 249
The dynamics and retention of phosphorus in lentic and lotic patches of river–lake systems
by A. Hillbricht-Ilkowska 257
Particulate phosphorus sedimentation at the river inflow to a lake
by L. Kufel 269
Patterns of spatial distribution of phosphorus regeneration by zooplankton in a river–lake transitory zone
by J. Ejsmont-Karabin, J. Królikowska & T. Węgleńska 275

Drainage history and land use pattern of a Swedish river system – their importance for understanding nitrogen and phosphorus load
by A. Krug 285
Impact on lake development of changed agricultural watershed exploitation during the last three centuries
by T. Klein 297

Ecotone recovery and management
Nutrient retention of the Kis-Balaton Water Protection System
by P. Pomogyi 309
A multi-pond system as a protective zone for the management of lakes in China
by C. Yin, M. Zhao, W. Jin & Z. Lan 321
Management of land/inland water ecotones: needs for regional approaches to achieve sustainable ecological systems
by M. M. Holland 331
The application of the ecotone concept in defining nutrient management requirements for the upper Potomac River basin
by N. A. Jaworski 341
Modelling the effects of alternative nutrient control policies – the example of Slapton Ley, Devon, UK
by P. E. O'Sullivan 351